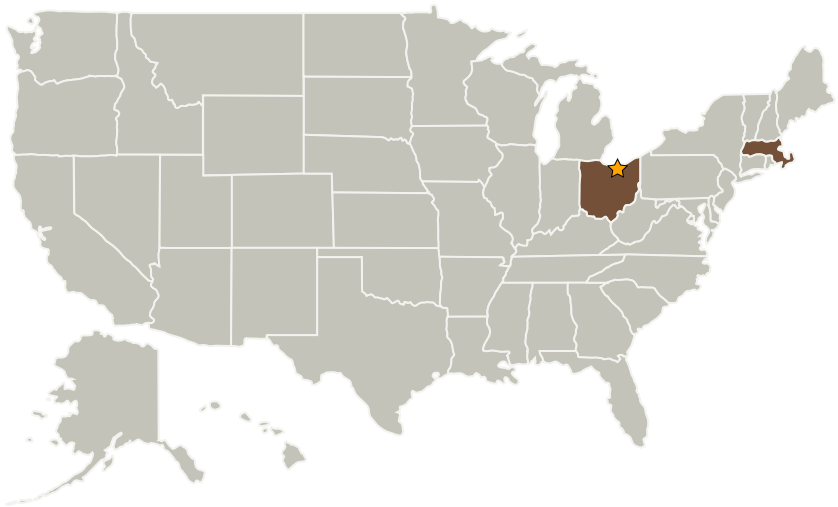
Reusable Handheld Electrolytes and Lab Technology for Humans (rHEALTH Sensor), Phase II

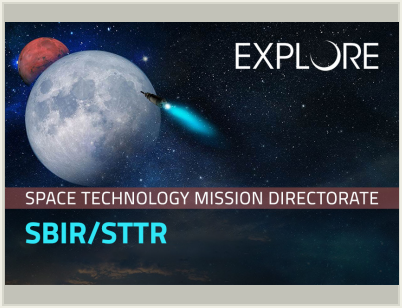
Completed Technology Project (2009 - 2011)

Project Introduction

The goal of the rHEALTH sensor is to provide rapid, low-cost, handheld complete blood count (CBC), cell differential counts, electrolyte measurements, and other lab tests based on a reusable, flow-based microfluidic platform. For Phase II, we will develop an rHEALTH prototype to be delivered to NASA for reusable CBC, cell differential counts, and electrolyte measurements. Each subassembly and individual assay will be tested individually prior to full integration into the system level prototype. The rHEALTH sensor is a compact, portable device that employs cutting-edge fluorescence detection optics, innovative microfluidics, and unique capabilities. Based on its streamlined design, the rHEALTH sensor is able to perform a suite of different assays using a single drop of blood. Furthermore, the entire system allows cost-effective operation because of its nanoliter operating volumes. This is in contrast to existing point-of-care diagnostics devices such as the iSTAT and Piccolo systems which only perform one panel of assays per disposable reagent cartridge. The result is a highly practical, cost-effective, and powerful sensor. The successful completion of the Phase II program is a significant milestone for our rHEALTH sensor. It means that we would have been successful in shrinking hospital-sized clinical laboratory into a portable device.

Primary U.S. Work Locations and Key Partners





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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Glenn Research Center (GRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Glenn Research Center(GRC)	Lead Organization	NASA Center	Cleveland, Ohio
The DNA Medicine Institute	Supporting Organization	Industry	Cambridge, Massachusetts

Primary U.S. Work Locations	
Massachusetts	Ohio

Project Transitions

January 2009: Project Start

November 2011: Closed out

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX17 Guidance, Navigation, and Control (GN&C)
  - TX17.2 Navigation Technologies
    - TX17.2.3 Navigation Sensors